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ERRATUM

Genus *Glyphonycteris* Thomas, 1896 (Mammalia: Chiroptera) in Ecuador: first confirmed record of *G. sylvestris* Thomas, 1896 and a geographical review to *G. daviesi* (Hill, 1965)

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After publication, errors in GenBank accession numbers were discovered:

Page 5, Figure 4. Change QCAZ15197 to KX910803.
Page 5, Figure 5. Change QCAZ15197 to KX910802.
Page 9, Appendix 1, Table A1. Change *Cyt-b* QCAZ15197 to KX910803, and change *COI* QCAZ15197 to KX910802.

The authors regret these errors.

The publication, in its original, unaltered form, begins on the next page.

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Genus *Glyphonycteris* Thomas, 1896 (Mammalia: Chiroptera) in Ecuador: first confirmed record of *G. sylvestris* Thomas, 1896 and a geographical review to *G. daviesi* (Hill, 1965)

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Abstract: Herein we present a geographical review to the genus *Glyphonycteris* in Ecuador. We confirm the first record for *G. sylvestris* for the country, which extends its range about 680 km southwest of the nearest previously known record. This first record belongs to an individual captured in Sangay National Park, Morona Santiago province, eastern slopes of the Andes. We also review the records of *G. daviesi* deposited in scientific collections and mentioned in literature, report a new record from west of the Andes, and present a distribution map.

Key words: Andes eastern slopes; distribution modelling; Phyllostomidae; range extension; tropical and subtropical forest

The genus *Glyphonycteris* Thomas, 1896 is confined to tropical and foothill areas in the Neotropics, from western Mexico to southeastern Brazil (Williams and Genoways 2008). The genus includes three species: *Glyphonycteris behnii* (W. Peters, 1985), *G. daviesi* (Hill, 1965), and *G. sylvestris* Thomas, 1896 (Williams and Genoways 2008). Only *Glyphonycteris daviesi* occurs in Ecuador (Tirira 2012), but it is also known from Honduras, Costa Rica, Panama, Venezuela, Trinidad Island, Guyana, Surinam, French Guiana, Brazil, Colombia, Peru, and Bolivia (Pine et al. 1996; Williams and Genoways 2008; Morales-Martínez and Suárez-Castro 2014), where it has been recorded below 500 m above sea level (Linares 1998; Solari et al. 1999; Ochoa and Velazco 2008; Williams and Genoways 2008). In South America, *G. daviesi* has been traditionally recorded east of the Andes (Koopman 1978, 1993; Simmons 2005; Williams and Genoways 2008), with the exception of one record from Centro Científico Río Palenque (USNM 528475), Los Ríos province, Ecuador (Pine et al. 1996). Herein, we report an additional record for the species west of the Andes that confirms its presence in the area.

Glyphonycteris sylvestris is patchily distributed in Central and South America, from western Mexico through Panama to east of the Andes in Colombia, Venezuela, Trinidad Island, Surinam, French Guiana, Peru. There is also an isolated population in southeastern Brazil (Williams and Genoways 2008), in the states of Paraná (Sekiama et al. 2001), Rio de Janeiro (Dias et al. 2003), and São Paulo (Trajano 1982; Pedro et al. 2001). This bat species prefers low elevations and tropical evergreen forest (Eisenberg and Redford 1999). Published records include elevations from 15 to 890 m (Handley 1976; Koopman 1978; Reid 1997; Linares 1998; Dias et al. 2003; Williams and Genoways 2008; Orrell 2013). *Glyphonycteris sylvestris* inhabits forest habitats (Handley 1966, 1976; Williams and Genoways 1980), mainly in humid and tropical areas, but also is found in deciduous lowland forest (Goodwin and Greenhall 1961; Williams and Genoways 2008). Although *G. sylvestris* is widely distributed in Neotropical lowlands, it is a rare and poorly known species throughout its range, and capture sites are widely separated (Reid 1997; Williams and Genoways 2008; Zortea et al. 2008). This species occurs mainly in primary forests, but is occasionally found in secondary forests and clearings (Ochoa and Velazco 2008). Herein, we report the first record for the species in Ecuador.

This geographical review includes information from a fieldtrip carried out in January 2015 as part of the expeditions of the project "Caracterización de la Biodiversidad del Parque Nacional Podocarpus, Parque Nacional Sangay, Parque Nacional Yacuri y Parque Nacional Llanganates (Arca de Noé)", founded by the Secretaría Nacional de Educación Superior, Ciencia, Tecnología e Innovación (SENESCYT), and under Research

Figure 1. Place of collection of *Glyphonycteris sylvestris*, in Sardinayacu, Sangay National Park, Morona Santiago province, Ecuador. Photo credit: M.F. Solórzano.

Permit MAE-DNB-ARRG-CM-2014-0002 issued by Ministerio del Ambiente del Ecuador (MAE).

An individual of *Glyphonycteris* was collected in Sardinayacu (02°05′47″ S, 078°09′31″ W, elevation 1,467 m), at Sangay National Park, Morona Santiago province, in the lowland eastern slope of the Andes Cordillera. This locality is placed in a well-preserved forest (Figure 1). The vegetation surrounding Sardinayacu consists of mature forest dominated by Romerillo trees (*Prumnopitys montana* [Humb. & Bonpl. Ex Willd.] de Laub.), and Palma Real (*Dictyocaryum lamarckianum* [Mart.] H. Wendl.). According to the Ecuadorian Ecosystem Classification System (Báez et al. 2012), the area corresponds to the Evergreen Low Montane Forest ecosystem of the southern Eastern Andes Cordillera. This ecosystem is characterized by canopies up to 20–30 m, with high Andean floral influence and the forest formation composed of *Podocarpus* Labill. and *Alzatea* Ruiz & Pav.

Our fieldwork in Sardinayacu was conducted from 16 January 2015 to 2 February 2015. Sampling effort consisted of 18 net/nights, using 12 mist nets of 6 and 12 m along a 300-m transect from 18:00 to 23:00 hours (1,080 net/hours). Specimens collected were permanently stored in the Mammalogy Division of Museo de Zoología at the Pontificia Universidad Católica del Ecuador (QCAZ). The *Glyphonycteris* specimen was catalogued with a field number, measured, sexed and tissue sampled; this specimen was assigned with the museum number QCAZ 15197.

We recorded external and craniodental measurements of the individual of *Glyphonycteris* (using a manual caliper to the nearest 0.01 mm) and included: total length (TL), head and body length (HB), tail length (T), hind foot length (HF), ear length (EAR), tragus, forearm length (FA), metacarpal III length (III-M), metacarpal IV length (IV-M), metacarpal V length (V-M), thumb with claw (TH); calcar length (CAL), tibia length (Tibia), greatest length of the skull, excluding incisors (GLS), condyle-basal length (CBL), zygomatic breadth (ZB), nasal length (NL), mastoid breadth (BM), palatine length (PL), braincase breadth (BBC), breadth across postorbital constriction (POC), length of maxillary toothrow (CM3), and breadth across molars (M3M3). Mass was measured in grams.

In order to confirm specific identification of the specimen as *G. sylvestris*, DNA sequences from two mitochondrial genes, cytochrome *b* (Cyt-*b*) and cytochrome oxidase I (COI) were generated from specimen QCAZ 15197 following the protocols used by Hoffmann and Baker (2001) and Ivanova et al. (2007), respectively. The sequences were compared to other sequences of Phyllostominae retrieved from GenBank. Species included in the analysis were: *Glyphonycteris daviesi*; *G. sylvestris* (from Guyana and Suriname); *Chrotopterus auritus* (Peters, 1856); *Lampronycteris brachyotis* (Dobson, 1879); *Macrotus californicus* Baird, 1858; *Macrotus waterhousii* Gray, 1843; *Micronycteris brosseti* Simmons and Voss, 1998; *Micronycteris buriri* Larsen, Siles, Pedersen & Kwiecinski, 2011; *Micronycteris giovanniae* Baker & Fonseca, 2007; *Micronycteris hirsuta* (Peters, 1869); *Micronycteris matses* Simmons, Voss & Fleck, 2002; *Micronycteris megalotis* (Gray, 1842); *Micronycteris minuta* (Gervais, 1856); *Micronycteris yatesi* Siles and Brooks, 2013; and *Trinycteris nicefori* (Sanborn, 1949). Accession numbers for all analyzed sequences, including the new sequences from *G. sylvestris* are provided in Appendix 1.

For molecular analyses, we used a Bayesian Inference (BI) approach using Markov Chains Monte Carlo (MCMC) through MrBayes 3.1 (Ronquist et al. 2012). Four Markov chains were run twice for 10,000,000 generations. Trees were sampled every 1,000 generations resulting in 20,000 saved trees per analysis (25% of the trees were discarded as "burn-in"). The remaining trees were used to obtain a consensus tree by the 50% majority rule in Mesquite 3.0. Posterior probabilities above 0.95 were considered strongly supported.

In addition, we compiled Ecuadorian records of *Glyphonycteris daviesi* from museum databases (GBIF, MECN, MEPN, and QCAZ) and literature (Pine et al. 1996; Mena-V. 1997; Albuja 1999; Reid et al. 2000; Moreno-Cárdenas 2009; McDonough et al. 2011; Tirira 2012). The specimens deposited in Ecuadorian museums were examined and their identifications confirmed with descriptions and keys from Hill (1965), Pine et al. (1996), Tirira (2007), and Williams and Genoways (2008).

All confirmed Ecuadorian records of *G. daviesi* (Appendix 2), except an anecdotal record from Pichincha province, Pacto Loma (Moreno-Cárdenas 2009), were combined with records from the currently known distribution (Appendix 3) to generate an ecological

niche model of *G. daviesi* using a Maximum Entropy approach implemented in Maxent software package v3.3.3k (Phillips et al. 2006). Nineteen bioclimatic variables, at 30 second per pixel resolution, were used as environmental variables from WorldClim (Hijmans et al. 2005), correlated variables were excluded from the final model after the evaluation runs. Several trial models were run in different regularization and complexity settings, to choose best fitting settings (Merow et al. 2013; Shcheglovitova and Anderson 2013), resulting in a model with 0.5 regularization and run with a combination of linear, quadratic, product, and threshold features. Five replications of the model were run using bootstrap with 20% of the records separated as test data in each run (Radosavljevic and Anderson 2014), and model performance was evaluated by measuring the area under the Receiver Operating Characteristic (ROC) curve (AUC). The evaluation models resulted in a mean AUC of 0.852.

The final model was generated in logistic output format and the presence/absence thresholds used were 0.174, a broader criterion using "Equate entropy of thresholded and original distributions" and similar to the minimum training presence, and 0.392, a narrower criterion using "Equal Training Sensitivity and Specificity", and was projected in Ecuador.

On 26 January 2015, we captured the first record of *G. sylvestris* (QCAZ 15197; Figures 2 and 3) from Ecuador. The voucher specimen is an adult female preserved as a dry skin, skull and complete skeleton, with tissues of liver and muscle stored in 90% ethanol. The specimen QCAZ 15197 was captured in a mist net placed at ground level above at 21:00 hours. Sixty-three other bat individuals were also captured in this fieldtrip belonging to 19 species: Phyllostomidae: *Desmodus rotundus* (É. Geoffroy St.-Hilaire, 1810); *Anoura aequatoris* Lönnberg, 1921; *Carollia brevicauda* (Schinz, 1821); *Sturnira bogotensis* Shamel, 1927; *Sturnira erythromos* (Tschudi, 1844); *Sturnira lilium* (É. Geoffroy St.-Hilaire, 1810); *Sturnira magna* De la Torre, 1966; *Sturnira oporaphilum* (Tschudi, 1844); *Artibeus lituratus* (Olfers, 1818); *Artibeus obscurus* (Schinz, 1821); *Artibeus planirostris* (Spix, 1823); *Dermanura glauca* (Thomas, 1893); *Platyrrhinus infuscus* (Peters, 1880); *Platyrrhinus ismaeli* Velazco, 2005; *Platyrrhinus nigellus* (Gardner & Carter, 1972); *Vampyressa thyone* Thomas, 1909; and Vespertilionidae: *Myotis riparius* Handley, 1960; and *Myotis* cf. *nigricans* (Schinz, 1821).

Recorded external and craniodental measurements from the specimen QCAZ 15197 are shown in Table 1, along with morphological data from earlier reports. The individual QCAZ 15197 had typical external and cranial diagnostic features of *Glyphonycteris sylvestris* according

Figure 2. *Glyphonycteris sylvestris* (QCAZ 15197) from Sardinayacu, Sangay National Park, Morona Santiago province, Ecuador. Photo credit: M.F. Solórzano.

Figure 3. Dorsal, ventral and lateral cranial views of *Glyphonycteris sylvestris* (QCAZ 15197) from Sardinayacu, Sangay National Park, Morona Santiago province, Ecuador. Photo credit: D.G. Tirira.

Table 1. External and cranial-dental measurements of the specimen of *Glyphonycteris sylvestris* (QCAZ 15197) reported in this paper, compared to the specimens reported by Thomas (1896) from Costa Rica (holotype); Morales-Martínez and Suárez-Castro (2014) from Colombia; Dias et al. (2003) from Brazil; Simmons and Voss (1998) from French Guiana; and Jones and Carter (1979) from Panama. Measurements abbreviations are explained in the text (all in millimeters, except weight, in grams). Sources: ALP: Collections of Adriano Lúcio Peracchi deposited in the Instituto de Biologia da Universidade Federal Rural do Rio do Janeiro; AMNH: American Museum of Natural History; BM: British Museum; ICN: Instituto de Ciencias Naturales at the Universidad Nacional de Colombia; QCAZ: Museo de Zoología, Pontificia Universidad Católica del Ecuador; USNM: National Museum of Natural History, Smithsonian Institution.

Measurements	Ecuador QCAZ 15197	Colombia ICN 13313	Costa Rica (holotype) BM, no number	Brazil ALP 5856	French Guiana AMNH 267897	Panama USNM 396399
Sex	Female	Male	Male	Male	Female	Female
Weight	9	8	–	7	–	–
TL	68.4	65	–	57	–	–
HB	56.4	56	50	48	–	–
T	12	9	–	9	–	–
HF	10.6	12	10.6	12	–	–
EAR	20	17	17	22	–	–
Tragus	9.3	–	–	–	–	–
FA	42.2	39	40	38.7	41.1	42
III-M	37.6	–	36	–	–	–
IV-M	34.9	–	–	–	–	–
V-M	37.9	–	–	–	–	–
TH	10.2	–	9.2	–	–	–
CAL	9.3	–	7.2	–	–	–
Tibia	15.7	–	–	–	–	–
GLS	19.5	18.8	19.6	–	20.2	19.8
CBL	18.3	–	–	–	18.5	–
ZB	10.1	9.6	–	–	10.0	10.7
NL	6.5	–	–	–	–	–
BM	8.3	8.5	–	–	9.0	–
PL	8.7	–	–	–	–	–
BBC	8.2	8.2	–	–	8.4	8.7
POC	4.8	4.6	–	–	4.7	4.5
CM3	7.8	7.7	–	–	8.1	7.9
M3M3	6.8	6.2	–	–	6.5	7.2

to Thomas (1896), as well as Williams and Genoways (2008). These features include relatively small size, forearm shorter than 44 mm, dorsal hair tricolored, lack of a cutaneous band across the forehead connecting the ears, lips and chin without papilla-like protuberances, domed rostrum shorter than braincase, greatest length of skull less than 22 mm, two pairs of upper incisors, inner incisors similar to canines in length (caniniforms), outer incisors hidden by cingulum of canine, lower incisors partially trifid, short upper canines only a little longer than incisors, first upper premolar (P3) having accessory cusps on lingual and posterior margins, and slightly recurved cusps on second upper premolar (P4).

In the genetic analysis, QCAZ 15197 appears nested within the *Glyphonycteris sylvestris* clade and well supported for both Cyt-*b* (Figure 4) and COI markers (Figure 5). These phylograms also show a separation between *G. sylvestris* from northeast South America (TK 16374, ROM 109156, ROM 111823, ROM 107445, ROM 106626, all from Guyana, and TK 10461, from Suriname) and Ecuador, which may be a result of the absence of records from Venezuela, Colombia, and Peru.

Fifteen specimens are recorded as vouchers for *Glyphonycteris daviesi* in Ecuador (Appendix 2), thirteen in the eastern versant of the Andes, in Orellana, Pastaza, Sucumbíos, and Zamora Chinchipe provinces, in an altitudinal range from 180 to 1,030 m above sea level, and two from western versant of the Andes. These two are the specimen from Los Ríos province (220 m in altitude) reported by Pine et al. (1996), and a unpublished record, an adult female (MEPN 10266), captured at Río Naranjal, Santa Rosa de Naranjal (00°19′51″ N, 078°55′55″ W, 549 m), Imbabura province, near the border of Esmeraldas and Pichincha provinces and close to the Cotacachi-Cayapas Ecological Reserve. Moreno-Cárdenas (2009) reported an additional record from Pacto Loma (00°09′51″ N, 078°52′11″ W, 1,086 m), at La Esperanza, Mashpi Protected Forest, Pichincha province. This record would correspond to the highest altitudinal record for this species, exceeding the elevations of other records by almost 500 m. However, this specimen was not captured, so there is not a voucher specimen in a scientific collection, and we consider this record only as anecdotal. The specimen collected at El Kimi (QCAZ 13250), Zamora Chinchipe province at 1,030 m, is to date the highest confirmed altitude record for the species, exceeding by more than 500 m previous documented elevations (Linares 1998; Solari et al.

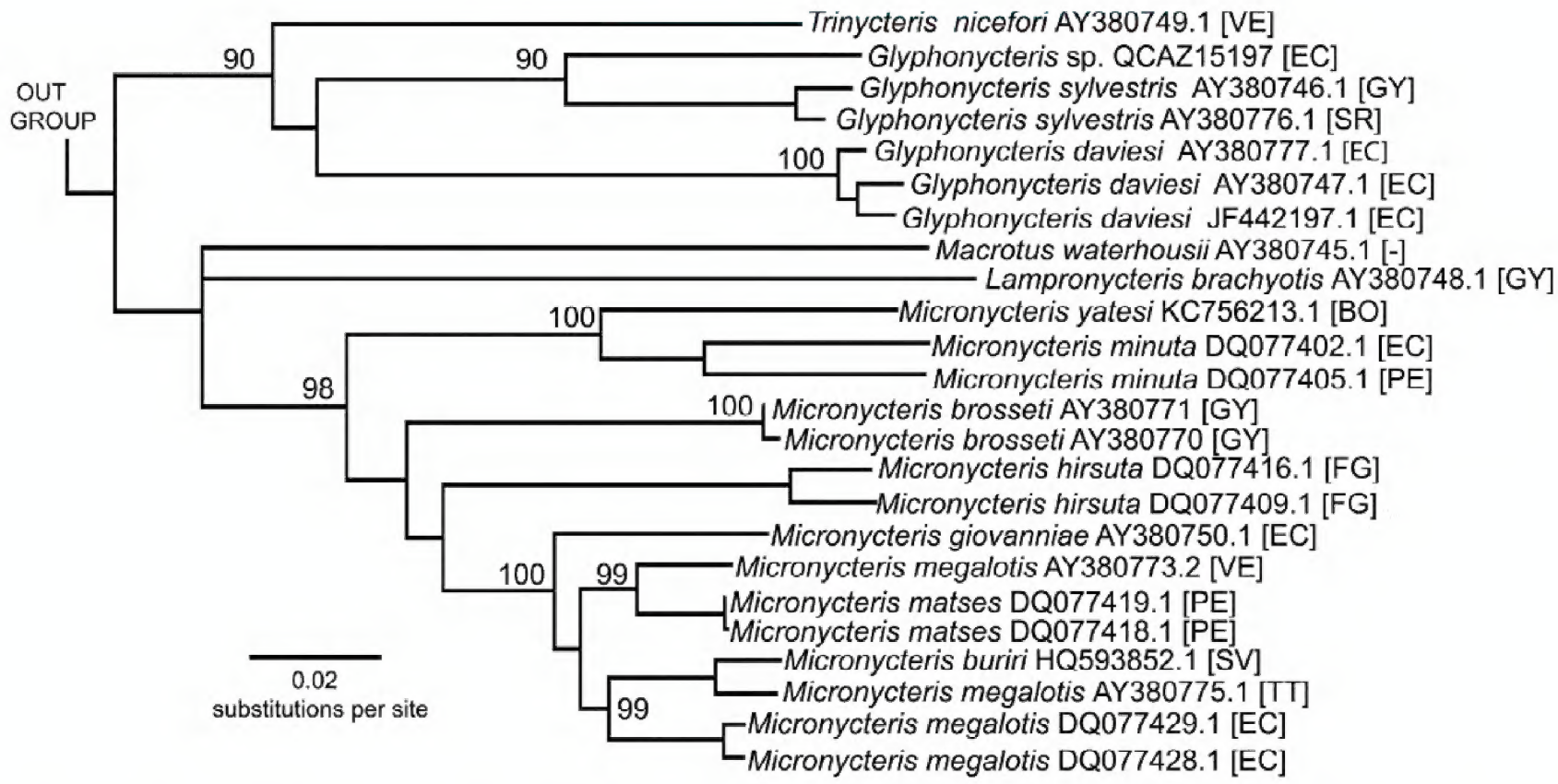

Figure 4. Cytochrome-*b* tree depicting the phylogenetic position of the Ecuadorian specimen (QCAZ 15197) in relation to other samples of *Glyphonycteris*. Accession number of GenBank follows the species name. Numbers along the branches are posterior probabilities, only the higher values are displayed. The external group is not shown (*Chrotopterus auritus* KC783057.1). Countries: BO: Bolivia; EC: Ecuador; FG: French Guiana; GY: Guyana; PE: Peru; SR: Suriname; SV: Saint Vincent and the Grenadines; TT: Trinidad and Tobago; VE: Venezuela.

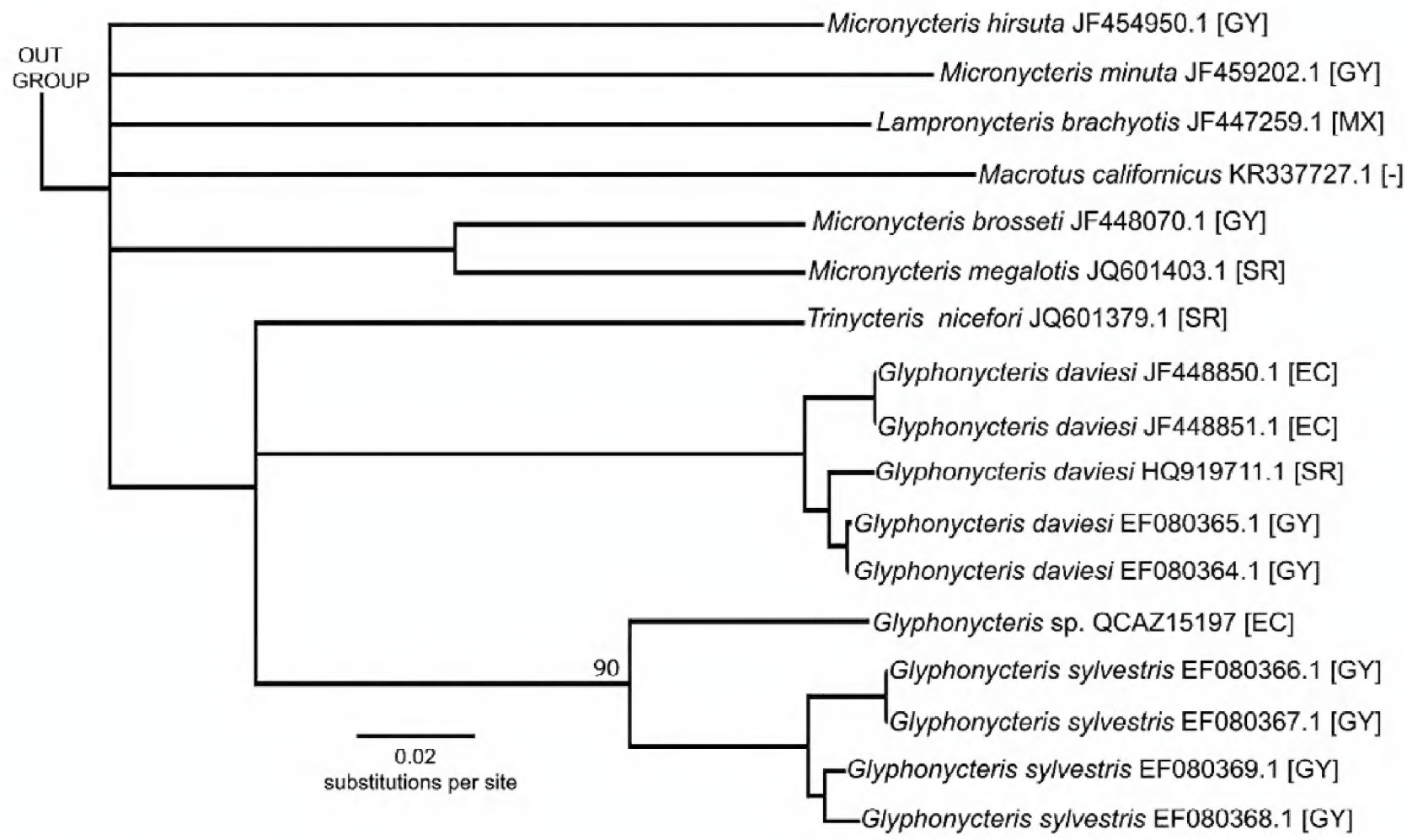

Figure 5. Cytochrome oxidase I tree depicting the phylogenetic position of the Ecuadorian specimen (QCAZ 15197) in relation to other samples of *Glyphonycteris*. Accession number of GenBank follows the species name. Numbers along the branches are posterior probabilities, only the higher values are displayed. The external group is not shown (*Chrotopterus auritus* JQ601325.1). Countries: EC: Ecuador; GY: Guyana; MX: Mexico; SR: Suriname.

1999; Ochoa and Velazco 2008; Williams and Genoways 2008).

The model predicts the distribution of *G. daviesi*, by habitat suitability, in areas where the species has not yet been observed (Figure 6), including lowlands and foothills on both sides of the Andes. Three bioclimatic variables explained 46.9% of the variation seen in the model: temperature annual range (responsible for 24.8% of the variation), precipitation of coldest quarter (13.2%), and the annual precipitation (8.9%).

The new record of *Glyphonycteris sylvestris* extends both its distributional range, about 680 km southwest of the nearest previously known published record in Caquetá, Estación Puerto Abeja, Colombia (Montenegro and Romero-Ruiz 2000; Figure 7), and altitudinal range, almost 600 m to the highest altitudinal record in Cordillera Vilcabamba, west side, Cuzco Department, Peru (Koopman 1978); consequently, this is the first record to the species

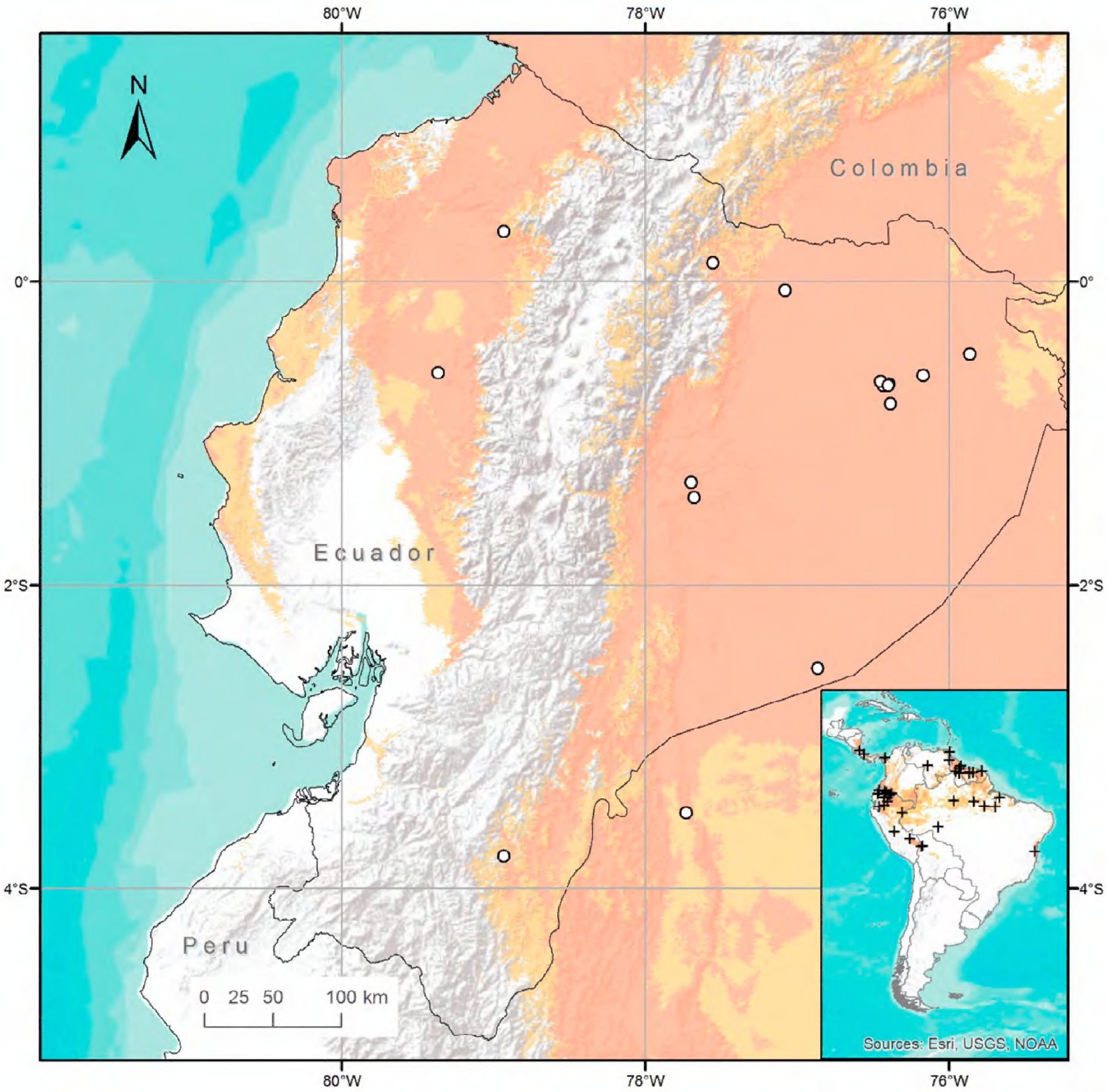

Figure 6. MAXENT ecological niche model of *Glyphonycteris daviesi*. White circles represent records reported in this study. Crosses represent occurrence localities for the known distribution. Different thresholds used in the analysis are depicted in shades of orange.

in a subtropical forest (more than 1,000 m in altitude).

The record of *Glyphonycteris sylvestris* increases to 172 the Ecuadorian bat diversity according to the previous report of Burneo et al. (2015). This offers evidence that Ecuador still has unexplored areas and several unknown species to be described.

The record from Santa Rosa de Naranjal, and the distribution modelling presented at Figure 6, offers evidence that the western slopes of the Andes present a suitable habitat for *G. daviesi*. Important areas are the Cordillera Chongón-Colonche in Manabí province, where two protected forests have been declared (Daule-Peripa and Carrizal-Chone), and in the eastern slopes, there is suitable habitat in the Cordillera del Kutukú Protected Forest. Several national protected areas are within areas identified as highly suitable in the model: Cayambe-Coca, Sumaco Napo-Galeras, Sangay and Llanganates national parks, and the Cotacachi-Cayapas Ecological Reserve. More collection localities are needed in expected lowland areas. This could expand the current model to eastern and southeastern Ecuador where the species should be expected near the Peruvian border.

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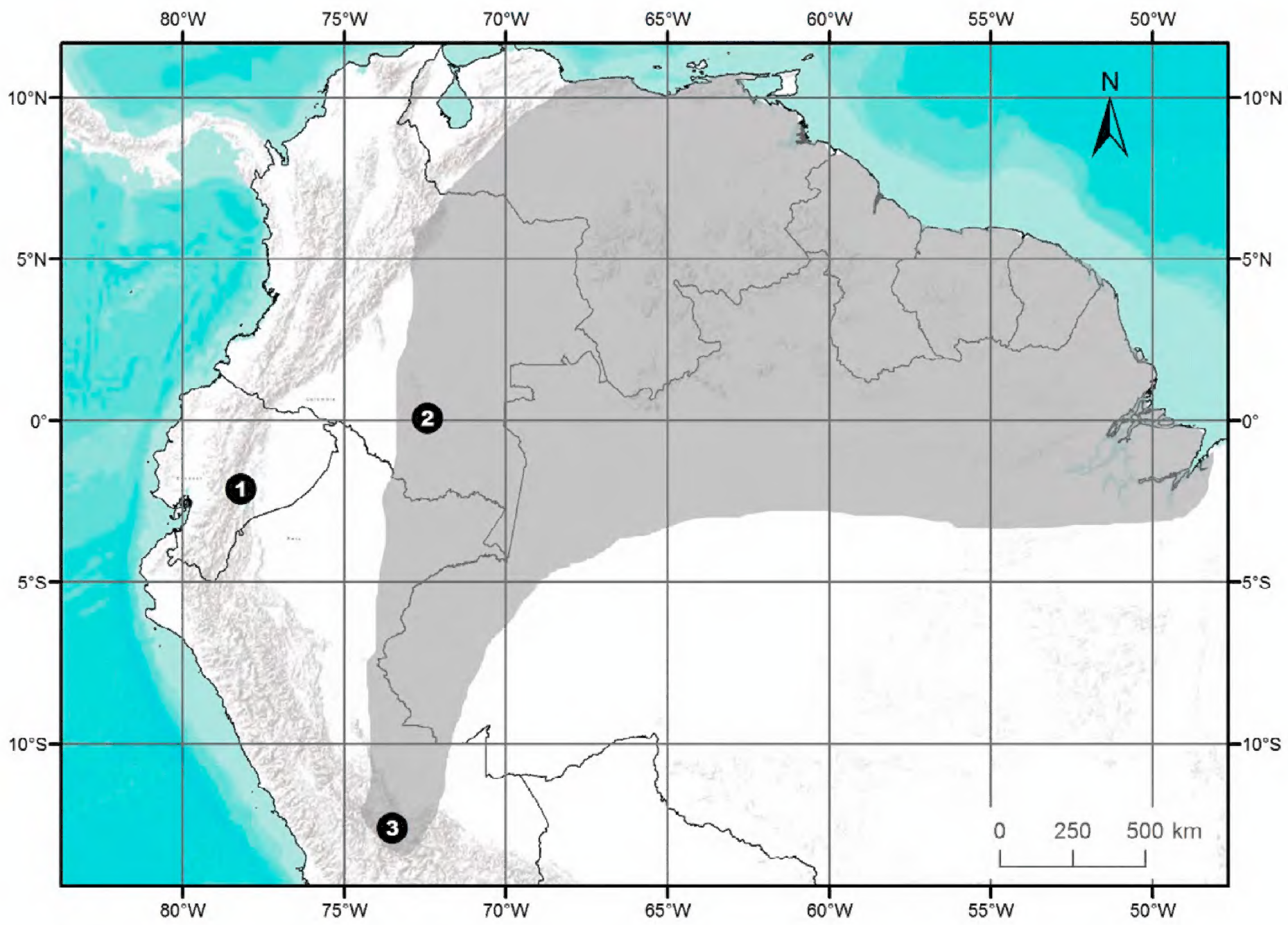

Figure 7. Distribution of *Glyphonycteris sylvestris* according to Williams and Genoways (2008). Point 1 represents our record reported in this study; points 2 and 3 represent nearest previously known records from Caquetá, Estación Puerto Abeja, Colombia (2), and Cusco, west side of Cordillera Vilcabamba (3).

holdings in their collections. We thank Don E. Wilson for contributing data from the National Museum of Natural History, Smithsonian Institution (USNM), and for reviewing the English version. The field and laboratory work in Ecuador was funded by a grant from Secretaría Nacional de Educación Superior, Ciencia, Tecnología e Innovación (SENESCYT) and the Arca de Noé Initiative.

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APPENDICES

Appendix 1

Table A1. Accession numbers for all analyzed sequences.

Species	Country	Museum number	Accession number	
			Cyt–*b*	COI
Chrotopterus auritus	–	AMNH110459	KC783057.1	–
Chrotopterus auritus	Suriname	ROM119494	–	JQ601325.1
Glyphonycteris daviesi	Ecuador	ROM104042 [TK16370]	AY380747.1	JF448850.1
Glyphonycteris daviesi	Ecuador	ROM105495	AY380777.1	–
Glyphonycteris daviesi	Ecuador	QCAZ8632 [ASK7800]	JF442197.1	–
Glyphonycteris daviesi	Guyana	ROM112678	–	EF080365.1
Glyphonycteris daviesi	Guyana	ROM115669	–	EF080364.1
Glyphonycteris daviesi	Suriname	ROM120355	–	HQ919711.1
Glyphonycteris sylvestris	Ecuador	QCAZ15197	QCAZ15197	QCAZ15197
Glyphonycteris sylvestris	Guyana	ROM106626	–	EF080366.1
Glyphonycteris sylvestris	Guyana	ROM107445	–	EF080367.1
Glyphonycteris sylvestris	Guyana	ROM109156	–	EF080369.1
Glyphonycteris sylvestris	Guyana	ROM111823	–	EF080368.1
Glyphonycteris sylvestris	Suriname	TK10461	AY380776.1	–
Glyphonycteris sylvestris	Guyana	TK16374	AY380746.1	–
Lampronycteris brachyotis	Guyana	TK25239	AY380748.1	–
Lampronycteris brachyotis	Mexico	ROM98223	–	JF447259.1
Macrotus californicus	–	–	–	KR337727.1
Macrotus waterhousii	–	TTU71435 [TK27889]	AY380745.1	–
Micronycteris brosseti	Guyana	KU155162	AY380770	–
Micronycteris brosseti	Guyana	KU155163	AY380771	–
Micronycteris brosseti	Guyana	ROM111469	–	JF448070.1
Micronycteris buriri	Saint Vincent and the Grenadines	TTU105642 [TK144584]	HQ593852.1	–
Micronycteris giovanniae	Ecuador	TTU85445 [TK104673]	AY380750.1	–
Micronycteris hirsuta	French Guiana	TTU103130 [TK135937]	DQ077416.1	–
Micronycteris hirsuta	French Guiana	TK82835	DQ077409.1	–
Micronycteris hirsuta	Guyana	ROM118963	–	JF454950.1
Micronycteris matses	Peru	TK82833	DQ077418.1	–
Micronycteris matses	Peru	TK82834	DQ077419.1	–
Micronycteris megalotis	Ecuador	TTU103291 [TK134837]	DQ077428.1	–
Micronycteris megalotis	Ecuador	TTU103437 [TK134960]	DQ077429.1	–
Micronycteris megalotis	Suriname	ROM119654	–	JQ601403.1
Micronycteris megalotis	Venezuela	TK19040	AY380773.2	–
Micronycteris megalotis	Trinidad and Tobago	TTU43944 [TK25147]	AY380775.1	–
Micronycteris minuta	Ecuador	TTU103201 [TK135801]	DQ077402.1	–
Micronycteris minuta	Guyana	ROM119858	–	JF459202.1
Micronycteris minuta	Peru	TK82836	DQ077405.1	–
Micronycteris yatesi	Bolivia	CBF6154	KC756213.1	–
Trinycteris nicefori	Suriname	ROM119614	–	JQ601379.1
Trinycteris nicefori	Venezuela	TK15189	AY380749.1	–

Appendix 2

Specimens of the genus *Glyphonycteris* recorded from Ecuador. Specimen data were extracted from literature, and museums as indicated below. Museum acronyms: MECN, Museo Ecuatoriano de Ciencias Naturales, Quito, Ecuador; MEPN, Museo de Historia Natural, Escuela Politécnica Nacional, Quito, Ecuador; MUCE, Museo de Zoología, Universidad Central del Ecuador, Quito, Ecuador; QCAZ, Museo de Zoología, Pontificia Universidad Católica del Ecuador, Quito, Ecuador; ROM, Royal Ontario Museum, Toronto, Ontario, Canada; USNM, National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA.

Glyphonycteris daviesi [16 specimens and localities]: Imbabura [1]: Santa Rosa de Naranjal, Río Naranjal (MEPN 10266), near border to Esmeraldas and Pichincha provinces, close to Cotacachi-Cayapas Ecological Reserve. Los Ríos [1]: Centro Científico Río Palenque, 47 km S of Santo Domingo de los Colorados (USNM 528475; Pine et al. 1996). Orellana [6]: 1 km S of Estación Científica Onkone Gare, 38 km S of Pompeya Sur, Yasuní National Park (MECN 887 [= ROM 105495]; Reid et al. 2000); 1 km S of Estación Científica Yasuní, Yasuní National Park (ROM 105711; Reid et al. 2000); 42 km S and 1 km E of Pompeya Sur, Yasuní National Park (ROM 104042; Reid et al. 2000); 66 km S of Pompeya Sur, Yasuní National Park (ROM 105275; Reid et al. 2000); Estación Científica Yasuní, Ceiba Trail, Yasuní National Park (QCAZ 13989); Estación de Biodiversidad Tiputini (QCAZ 8632; McDonough et al. 2011). Pastaza [3]: Estación Científica Oglán Alto (QCAZ 6617); Kapawi, Pastaza River (MUCE no number); Villano, helipuerto K32 (QCAZ 10779). Pichincha [1]: Pacto Loma, sector La Esperanza, Mashpi Protected Forest (no voucher; Moreno-Cárdenas 2009; not mapped). Sucumbíos [3]: Paujil, north Aguarico River (MEPN 894; Albuja 1999); Pozo Zafiro, near Aguarico River (MEPN 9288 [= 96.4482]; Albuja 1999); Sinangüé, comuna Cofán, Cayambe-Coca National Park (no voucher; Mena-V. 1997). Zamora Chinchipe [1]: El Kimi (QCAZ 13250).

Glyphonycteris sylvestris [1 specimen]: Morona Santiago [1]: Sardinayacu, Sangay National Park (QCAZ 15197).

Appendix 3

Records of *Glyphonycteris daviesi* used for distribution modelling (exclude records from Ecuador that were indicated in Appendix 2). Specimen data were extracted from literature, museum databases as indicated below, and GBIF (2016). Museum acronyms used are: AMNH, American Museum of Natural History, New York, USA; KU, University of Kansas Natural History Museum, Lawrence, Kansas, USA; MSB, Museum of Southwestern Biology, The University of New Mexico, Albuquerque, New Mexico, USA; ROM, Royal Ontario Museum, Toronto, Ontario, Canada; USNM, National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA.

Bolivia, La Paz [2]: 25 km W de Ixiamas (Williams and Genoways 2008); Río Undumo, 30 km NE de Ixiamas (Aguirre 2007). **Brazil**, Amazonas [1] (Williams and Genoways 2008): Dimona Reserve. Bahía [1] (Williams and Genoways 2008): Fazenda Serra do Teimoso. Pará [4] (Williams and Genoways 2008): Belem; 52 km SSW de Altamira; Alter do Chao; Area do Caraipe. Rondônia [1] (Williams and Genoways 2008): 20 km SW de Porto Velho. **Costa Rica**, Heredia [2]: Reserva Biológica La Selva (KU), Río Puerto Viejo de Sarapiqui (MSB). **French Guiana** [2]: Paracou (AMNH NBS-836), Piste Saint Elie (Williams and Genoways 2008). **Guyana** (holotype): 24 miles from Bartica; and three additional not described locations from GBIF. **Panama**, Bocas del Toro [1]: Sibube (USNM 10655). Kuna Yala [1] Armila, Quebrada Venado (USNM 11423). **Peru**, Amazonas [1]: Soledad (Williams and Genoways 2008). Loreto [1]: Nuevo San Juan, Río Galvez (AMNH DWF 697). Madre de Dios [1]: Pakitza (Williams and Genoways 2008). Pasco [1]: San Juan (USNM 1848). **Suriname** [4]: Brownsberg Nature Park, Headquarters (ROM F41125), Brownsberg Nature Park, Jeep Trail (GBIF), Sipiliwini, Raleigh Falls (Williams and Genoways 2008), and an additional not described location from GBIF. **Trinidad and Tobago** [1] (Williams and Genoways 2008): Victoria Mayaro Forest Reserve. **Venezuela**, Bolivar [2] (Williams and Genoways 2008): Reserva Florestal de Imataca; Serranía de Pijiguaos.